REMARKS

INTRODUCTION

In view of the following remarks, reconsideration of the allowability of the claims is respectfully requested.

Claims 1-18 are pending in the subject application.

FURTHER EXPLANATION OF REFERENCES

The inventor for the present application has further reviewed the cited references and the present response includes further discussions pointing out the apparent misunderstanding of the claim language and the Office Action citations supporting the Office Action's interpretation of either reference supporting the claimed "information flow" disclosure. These comments are provided below under the heading "REFERENCE EXPLANATIONS."

Accordingly, reconsideration of the pending claims is respectfully requested.

REJECTION UNDER 35 USC 103

Claims 1-3, 10 and 16-18 stand rejected under 35 USC § 103 as being obvious over Ravdin et al., U.S. Patent No. 5,862,304, in view of Smyth, U.S. Patent No. 5,465,321, and claims 4-9 and 11-15 stand rejected under 35 USC § 103 as being obvious over Ravdin et al. and Smyth, in view of Abrams et al., U.S. Patent No. 6,117,066. These rejections are respectfully traversed.

ADVISORY ACTION

In the previous response, applicant attempted to detail the differences between Ravdin et al. and Smyth, as well as their combination not being obvious. Applicant pointed out that there would not appear any reason for modifying Ravdin et al. to include the neural network of Smyth, and that the modification of Ravdin et al. to include such a neural network would appear to make the invention of Ravdin et al. more complicated than anticipated by the inventors of Ravdin et al.

In response to applicant's response, in the Advisory Action issued May 4, 2004, the Advisory Action indicated that applicant's recently filed Request for Reconsideration was considered, but that the Examiner disagreed with applicant's argument that it would not have been obvious to modify Ravdin et al. to include the neural network of Smyth, and disagreed with the premise that Ravdin et al. is directed toward a "static" system. The Examiner does

acknowledge that Ravdin et al. does not train the respective neural network with dynamic information, but indicates that the claims are not limited to this requirement.

In further supporting the obviousness argument, the Advisory Action again merely indicates that it would have been obvious to incorporate the neural network of Smyth into Ravdin et al., since the evaluation of a temporal and hierachial pattern of information flow of the neural network of Smyth would enable Ravdin et al. to have "robust decision making, ultimately increasing the speed and accuracy with which future diseases states are predicted."

Applicant again suggests that this proffered motivation for the suggested combination fails to meet a prima facie obviousness standard.

MPEP § 2142 states that "[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the Examiner to explain why the combination of the teachings is proper." The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Dembiczak, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** Dembiczak, 50 USPQ2d at 1617. "'The factual inquiry whether to combine the references must be thorough and searching.'" In re Lee, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (citing McGinley v. Franklin Sports, Inc., 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)). The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. Id. at 1433-34. The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

Further, despite the Office Action's attempt to evidence the obviousness modification rationale by apparently relying on unsupported conclusory motivation, it is well settled that "the Board cannot simply reach conclusions based on its own understanding of experience - or on its assessment of what would be basic knowledge or common sense. Rather the Board must point to some **concrete evidence** in the record in support of these findings." In re Zurko, 258 F. 3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). See also In re Lee, 277 F. 3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by clarifying that the principles of *"common knowledge"* and *"common sense"* may only be applied to the analysis of evidence, rather than be a substitute for

evidence. The court has also recently expanded their reasoning on this topic in <u>In re Thrift</u>, 298 F. 3d 1357, 1363, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002).

Thus, accordingly, a prima facie obviousness rejection requires <u>concrete evidence</u> of motivation in the record that would lead one skilled in the art to combine the relevant teachings.

It is respectfully submitted that regardless of the beneficial aspects of the neural network in <u>Smyth</u>, there is no evidence in the record that the same neural network should be incorporated into the system of <u>Ravdin et al.</u> Obviously, the neural network solves problems associated with the underlying system in <u>Smyth</u>, but that does not automatically make those solutions applicable, beneficial, or even necessary for every other system that may utilize neural networks. There must be some link between the solution in <u>Smyth</u> and the need/desire of the same in <u>Ravdin et al.</u> Conversely, the outstanding rejections are based solely on the benefits of <u>Smyth</u>'s neural network and fails to provide any evidence, other than the Examiner's opinion, that the same should be modified into <u>Ravdin et al.</u>

Therefore, for at least the above, it is respectfully submitted that the outstanding rejections fail to meet a prima facie obviousness case.

<u>REFERENCE EXPLANATIONS</u>.

Further to the above, it is further submitted that the purported support for the claimed "information flow" being disclosed by <u>Smyth</u> or <u>Ravdin et al.</u> has been mistaken, and it is respectfully submitted that neither disclose the same.

As previously noted, the outstanding Office Action recites that <u>Ravdin et al.</u> discloses all the claimed features of the independent claims, except for "the information flow describing a development of a predictability of plural future system states."

The Office Action thereafter indicated that it would have been obvious to modify <u>Ravdin et al.</u> to include a neural network, of <u>Smyth</u>, which "teaches future state prediction using evaluation of a temporal, hierarchical pattern of information flow for the purpose of predicting future outcomes," to "continuously utilize the monitored data to increase the speed and accuracy of predicted future states."

It is respectfully submitted that neither <u>Ravdin et al.</u> nor <u>Smyth</u>, alone or in combination, disclose or suggest all the claimed features, including the claimed information flow.

Further, it is respectfully submitted that an information flow, which according to independent claim 1 describes a development of a predictability of numerous future system

states, is neither disclosed or suggested in <u>Ravdin et al.</u> The Office Action references <u>Ravdin et al.</u>, in column 9, lines 49-52, though this is unrelated to the claimed information flow. This portion of <u>Ravdin et al.</u> describes "learning iterations" of a neural network. This discussion is completely different from a description of a development of a predictability of plural future states, as claimed in independent claim 1.

Arguably, <u>Smyth</u> may discuss a similar problem as that solved by the present invention, with the object in both cases being to estimate or predict the present state of a dynamical system with regard to an outstanding abnormality.

However, none of the cited portions of Smyth disclose an information flow, according to the aforementioned recitation in claim 1.

The term "information flow" is used in <u>Smyth</u> only in the abstract and in column 5, lines 40-41. In both cases the term "information flow" is only used rhetorically as a synonym for the course described in the respective previous lines. Here, in <u>Smyth</u>, the steps are concerned of a method of estimating the present system state.

In the context of the presently claimed invention, the concept of "information flow" is used completely differently. The present application, as well as claim limitations, clearly describe the development of a **predictability of plural future states**. The corresponding portions of the specification and portions of the sources cited in the specification have previously been discussed in detail.

In <u>Smyth</u>, on the other hand, the concept "information flow" is used purely rhetorically for a series of process steps. Smyth fails to disclose any definition of the concept "information flow". In particular, an exact mathematical definition discussed in the present invention is lacking.

Furthermore, it is respectfully submitted that one skilled in the art would immediately recognize that <u>Smyth</u> does not disclose or suggest the invention's solution set. Furthermore, this conclusion will now be made more clear, hereinbelow, using the remaining portions of Smyth cited by the Examiner.

The first portion of <u>Smyth</u> cited by the Examiner, column 2, lines 37-53, only describes generally possible uses in the field of health monitoring. The method and device, according to the presently claimed invention, are neither disclosed nor hinted at.

The second portion of <u>Smyth</u> cited by the Examiner, column 3, lines 30-45, describes only a general problem, well known in the art, in the determination of a state of a dynamical system.

The third portion of <u>Smyth</u> cited by the Examiner, column 5, line 46 to column 6, line 8, describes only a method for calculating the probability of numerous state transitions and for estimating the *present state* based on the determined probabilities. In all the methods known to one skilled in the art, **only the <u>first</u> point in the future is considered**. Nothing further could be derived <u>Smyth</u>.

Quite in contrast to this, the information flow of the presently claimed invention describes a predictability of <u>numerous future system states</u>: from the specification (page 1, lines 14-18) it follows that the "information flow" characterizes dwindling statistical dependencies between the whole past and an instant which lies p steps in the future, and is a function of p. <u>The information flow thus considers p steps into the future.</u>

In contrast to this, in the prior art, <u>Smyth</u> at best sets forth a single step in the future. Nothing other than this can be derived from <u>Smyth</u>.

The solution set of the presently claimed invention thus rests on a completely novel concept, namely the characterization of the data using an "information flow" which describes the development of a predictability of a series, i.e., plural, of future system states. Only by the comparison of such an "information flow" with a "comparative information flow" is an accurate prediction of the abnormality possible, as in the presently claimed invention. A corresponding advanced and efficient method and its mathematical definition are neither disclosed nor suggested by <u>Smyth</u>.

The fourth portion of <u>Smyth</u> referenced by the Examiner, column 6, lines 25-34, further describes only the general statement of the respective <u>Smyth</u> problem and the corresponding solution sets well known to one skilled in the art. Neither the method of the presently claimed invention nor the device, thereof, are disclosed or suggested.

The fifth portion of <u>Smyth</u> referenced by the Examiner, column 8, lines 15-29, provides only generally known technical means, which can come into use in the context of problem setting. Here general means are concerned, well known to one skilled in the art. Again, the method and device of the presently claimed invention are neither disclosed nor suggested.

The sixth portion of Smyth referenced by the Examiner, column 22, lines 29-37, describes only the trivial Bayes' Rule, well known to one skilled in the art. The Bayes' Rule is not the same as the presently claimed invention.

Thus the presently claimed invention is doubtlessly novel and inventive over Smyth, as well as Ravdin et al., alone or in combination, since neither disclose at least the presently claimed information flow as being the development of a predictability of plural future system states.

Therefore, for at least all the above, it is respectfully requested that these rejections be withdrawn and these claims allowed.

CONCLUSION

There being no further objections or rejections, it is submitted that the application is in condition for allowance, which action is courteously requested.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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7